

Commentary

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Many elite athletes try to imitate the effects of high altitude training by using hypoxic air machines. These training devices are thought to boost the oxygen carrying capacity of the blood and the production of red blood cells which are believed to yield an important competitive advantage in endurance sports. Hypoxic air machines do not contravene current antidoping regulations. However, many sports practitioners and some officials have expressed a feeling of uneasiness towards this new training technique, comparing it with traditional doping. And, indeed, the introduction of hypoxic air machines paves the way for allowing doping in a near future.

All sports related arguments that have been advanced in defence of these machines also support traditional doping. For instance, some objectors argue that hypoxic air machines render "a chemical advantage" and should therefore be forbidden. A standard defence against this criticism is that "even if it becomes more effective, training is still necessary for users of hypoxic air machines". The same answer, however, could be given by supporters of lifting the prohibition on doping. In a sense, every training technique (including doping) yields a chemical process in the body.

Consider now *fairness in competition*. Some athletes will be able to rest in oxygen tents, other will not. Those in favour of hypoxic air machines will probably answer that sport competitions are essentially unfair, in the sense that nature has endowed different athletes with different sporting abilities. Hypoxic air machines simply add a further element of inequality between competitors that could even yield an equalising effect (for instance, when a genetically inferior athlete gets the possibility of using an oxygen tent). In my opinion, this argument neutralises the objection of unfairness of hypoxic air machines. But, again, this defence opens the way for traditional doping: chemical substances might also have an equalising effect when administered to the less endowed athletes.¹

Many people still feel that if we let an athlete who trained with an hypoxic air

machine win a competition, its outcome will then be decided by factors other than physical excellence and the spirit of competition. These machines, therefore, violate the ideal of a sport competition, at least as these objectors conceive of it.

This is, in my view, an amazing objection. In the 1960s, the Finnish cross country skier Eero Mäntyranta was suspected of blood doping because his red blood count was 20% higher than of his competitors. Thirty years later, 200 members of his family were tested by scientists, and they found that 50 of them, including Mäntyranta himself, were born with a rare genetic mutation that causes an increase in oxygen-rich red blood cells. This mutation gave Mäntyranta a competitive advantage over his rivals. Now, why would it have been unfair, or contrary to the ideal of sport, to give Mäntyranta's competitors the chance of equalising competitive conditions by resorting to old fashioned blood doping or, if they had been available at that time, hypoxic air machines? (Or, for that matter, to genetic enhancements in a not so far ahead future?)²

Many people think such training tactics are obviously unacceptable and tend to cling to the idea that only natural talent should decide the outcome of a sport competition. But why should congenital, genetically determined traits lead to victory and praise and not acquired ones? Such a notion of justice is not only flawed, it is also becoming obsolete due to the rapid medical developments that we are experiencing today. There is no reason to let the genetic lottery decide the outcome of a sport competition, when the odds of winning of all competitors might be levelled out by intentional and goal-oriented efforts to achieve higher levels of sporting performance.

Are critics right then when they oppose hypoxic air machines on the grounds of their resemblance with doping? Not entirely. It could be argued that there actually is a powerful case for allowing hypoxic air machines, while still banning traditional doping, which rests not on sports related but instead on medical reasons; such as the fact that

there do not seem to be any health risks associated with their use. (See, for instance, Merle Spriggs' article.³)

I find this position difficult to substantiate. Not only does the health argument deny autonomy to people as regards the right to decide how many risks they are willing to take to achieve professional success and rewards, but also in the end the medical objection will also prove toothless as new genetic technologies will make it possible to enhance sporting performance without risk of serious health injuries. Even sceptics nowadays recognise that the new genetic technologies have the potential of preventing and curing serious diseases. Therefore, and unlike traditional doping techniques, genetic technology will be widely used (as a matter of fact, it is already being used) in general medicine. Thus, before the new techniques are introduced in other areas of society, for instance sports medicine and education, they will be tested and developed in the healthcare system. Although still involving some risks, following their medical application, genetic modification techniques will most probably become as harmless as any medical technique can be—at least, no more harmful than current elite training methods.

Thus, the perception of critics that hypoxic air machines weaken current restrictions on the use of substances and methods that enhance performance in elite sports is correct. The conclusion they draw from this, however, is wrong: both hypoxic air machines *and* doping should be allowed.

Once the sports related arguments against doping are neutralised by widespread use of hypoxic air machines, progress in genetic engineering will also render the medical objections against doping obsolete. We should welcome, rather than fear, this effect. By exposing the arbitrariness of the ban on doping, hypoxic air machines contribute to more open and transparent sport competitions in the future.

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- 2 Tännsjö T, Tamburrini CM, eds. *The Genetic Design of Winness*. London: Routledge (forth coming).
- 3 Merle S. Hypoxic air machines: performance enhancement through effective training—or cheating? *J Med Ethics* 2005;**31**:112.